

WHAT IS CLAIMED IS:

1. A vehicle seat with a seat cushion tip-up structure comprising:

a slide rail means comprising a lower rail means and an upper rail means slidably engaged with said lower rail means, allowing said upper rail means to be slidably movable along said lower rail means in a forward direction to a side forwardly of said vehicle seat and a backward direction to a side backwardly of said vehicle seat;

a base frame means fixedly connected with said upper rail means;

a seat cushion rotatably connected with said base frame means so as to be able to be tipped up from a generally horizontal use position to a generally upright non-use position, said seat cushion having a forward end portion facing to said forward direction;

a lock mechanism for locking and unlocking said upper rail means to and from said lower rail means, said lock mechanism comprising: a lock means provided in said upper rail so as to be movable in one of a locking direction to lock said upper rail to said lower rail means and an unlocking direction to unlock said upper rail from said lower rail; and a rotary actuator means which is rotatably disposed above said lower rail means and operatively connected with said lock means; and

a lock/unlock actuator mechanism for actuating said lock mechanism to cause locking and unlocking of said upper rail means to and from said lower rail means, said lock/unlock actuator mechanism being provided between said seat cushion and said lock mechanism, and comprising:

an unlocking lever movably provided under said forward end portion of said seat cushion, said operation lever being normally set at a locking position and operable therefrom to an unlocking position;

a first connecting link extending along a longitudinal direction of said seat cushion and being movable along said longitudinal direction, said first connecting link being at one end thereof operatively connected with said operation lever;

a first rotary arm rotatably provided between said seat cushion and said base frame means, said first rotary arm being at one end thereof operatively

connected with another end of said first connecting link;

a second rotary arm fixedly connected at one end thereof with another end of said first rotary arm; and

a second connecting link operatively connected between another end of said second rotary arm and said rotary actuator means of said lock mechanism,

wherein, when said unlocking lever is set at said locking position, said lock means is retained in said locking direction so that said upper rail is locked to said lower rail, and wherein operation of said unlocking lever to said unlocking position causes movements of said first connecting link, said first rotary arm, said second rotary arm and said second connecting link, so as to rotate said rotary actuator means to move said lock means in said unlocking direction, so that said upper rail is unlocked from said lower rail.

2. The vehicle seat as claimed in Claim 1, wherein, said second connecting link has one end pivotally connected with said another end of said second rotary arm,

wherein said rotary actuator means of said lock mechanism comprises:

a rotary actuator piece rotatably provided to one of said seat back and said upper rail, said rotary actuator piece having one end portion pivotally connected with said another end of said second connecting link, and another end; and

a tilting actuator element rotatable about a center thereof, said tilting actuator element having one half portion and another half portion,

wherein said one half portion of said tilting actuator element is pivotally connected with said lock means, and

wherein, when said unlocking lever is set at said locking position, said another half portion of said tilting actuator element is normally disposed below said another end of said rotary actuator piece, while on the other hand, operation of said unlocking lever to said unlocking position causes rotation of said rotary actuator piece so as to bring said another end of the rotary actuator piece to contact with said another half portion of the tilting actuator element, so that, with further rotation of said rotary actuator piece, said tilting actuator element is rotated to cause rotation of said one half portion to move said lock means in said

unlocking direction, whereby said upper rail is unlocked from said lower rail.

3. The vehicle seat according to Claim 2, wherein a pressure rod is fixed to said another end of said rotary actuator piece, and wherein, when said unlocking lever is set at said locking position, said pressure rod is disposed above said another half portion of said tilting actuator element, while on the other hand, operation of said unlocking lever to said unlocking position causes rotation of said rotary actuator piece so as to bring said pressure rod to contact with said another half portion of the tilting actuator element, so that, with further rotation of said rotary actuator piece, said tilting actuator element is rotated to cause rotation of said one half portion to move said lock means in said unlocking direction, whereby said upper rail is unlocked from said lower rail.

4. A vehicle seat with a seat cushion tip-up structure comprising:

a slide rail means comprising a lower rail means and an upper rail means slidably engaged with said lower rail means, allowing said upper rail means to be slidingly movable along said lower rail means in a forward direction to a side forwardly of said vehicle seat and a backward direction to a side backwardly of said vehicle seat;

a base frame means fixedly connected with said upper rail means;

a seat cushion having a seat cushion frame provided therein, said seat cushion frame being rotatably connected with said base frame means so as to permit vertical rotation of the seat cushion frame between a generally horizontal use position and a generally upright non-use position, thereby allowing said seat cushion to be tipped up from said generally horizontal use position to said generally upright non-use position, wherein said seat cushion has a forward end portion facing to said forward direction;

said base frame means including: a point with which said seat cushion frame is rotatably connected; and an arcuate hole defined along a circumference of a circle having its center at said point;

a lock mechanism for locking and unlocking said upper rail means to and from said lower rail means, said lock mechanism comprising: a lock means provided in said upper

rail so as to be movable in one of a locking direction to lock said upper rail to said lower rail means and an unlocking direction to unlock said upper rail from said lower rail; and a rotary actuator means which is rotatably disposed above said lower rail means and operatively connected with said lock means; and

a lock/unlock actuator mechanism for actuating said lock mechanism to cause locking and unlocking of said upper rail means to and from said lower rail means, said lock/unlock actuator mechanism being provided between said seat cushion and said lock mechanism, and comprising:

an unlocking lever movably provided under said forward end portion of said seat cushion, said operation lever being normally set at a locking position and operable therefrom to an unlocking position;

a first connecting link extending along a longitudinal direction of said seat cushion and being movable along said longitudinal direction, said first connecting link being at one end thereof operatively connected with said unlocking lever;

a first rotary arm rotatably provided between said seat cushion and said base frame means, said first rotary arm being at one end thereof operatively connected with another end of said first connecting link;

a connecting shaft;

a second rotary arm fixedly connected at one end thereof with another end of said first rotary arm by said connecting shaft;

said connecting shaft being slidably inserted through said arcuate hole;

and

a second connecting link operatively connected between another end of said second rotary arm and said rotary actuator means of said lock mechanism,

wherein, when said unlocking lever is set at said locking position, said lock means is retained in said locking direction so that said upper rail is locked to said lower rail, and wherein operation of said unlocking lever to said unlocking position causes movement of said first connecting link to simultaneously rotate said first and second rotary arms, thereby causing movement of said second connecting link so as to rotate said rotary actuator means to move

said lock means in said unlocking direction, so that said upper rail is unlocked from said lower rail, and wherein, when rotating said seat cushion vertically, said connecting shaft is slidingly moved along said arcuate hole, thereby avoiding interference of the connecting shaft with said base frame means.

5. The vehicle seat as claimed in Claim 4, wherein said seat cushion is disposed inwardly of said base frame means, wherein said second connecting link and said second rotary arm are disposed outwardly of said base frame means, wherein said seat cushion frame has a hole formed therein, wherein both said first connecting link and said first rotary arm are disposed inwardly of said seat cushion frame, wherein said connecting shaft passes through said hole of said seat cushion frame as well as through said arcuate hole of said base frame means, thus connecting said first and second rotary arms in relation to said base frame means.

6. The vehicle seat as claimed in Claim 4, wherein a biasing means is provided for resiliently biasing said unlocking lever to said locking position, and said arcuate hole has one edge and another edge, with such an arrangement that, when said seat cushion is set in said generally horizontal use position, a biasing force of said biasing means acts to resiliently retain said unlocking lever in said locking direction, with said connecting shaft in contact with said one edge of said arcuate hole, whereby said rotary actuator means is positively retained in said unlocking direction to thereby keep said upper rail locked to said lower rail, and that, when tipping up said seat cushion to said generally upright non-use position, said connecting shaft is slightly moved along said arcuate hole in a direction from said one edge to said another edge of said particular arcuate hole, but drawn back to said one edge under the biasing force of said biasing means, so that, regardless of whether said seat cushion is in said generally horizontal use position or in said generally upright non-use position, both said lock mechanism and said lock/unlock actuation mechanism are retained in inoperative state, thereby normally retaining said vehicle seat in a state locked to a given position on said lower rail, while allowing said unlocking lever to be operable from said

locking position to said unlocking position, or vice versus.